

Bristol City Council

# Parks & Greenspace Strategy

## **Discussion Paper** Landscape Infrastructure in Balanced & Sustainable Communities: **Health & Wellbeing**

June 2007 <sup>sh</sup>

## 1. National, Regional and Local Planning Context

**Planning Policy Guidance (PPG) 17**<sup>(1)</sup> stated that:

- *'open spaces, sport and recreation all underpin people's quality of life'.*
- open space provision is *'fundamental to delivering broader Government objectives including: supporting urban renaissance, the promotion of social inclusion and community cohesion, health and well being, and promoting more sustainable development'.*  
It also makes clear:
- how vital the role is that *'open spaces, sports and recreational facilities have in promoting healthy living and preventing illness, and the social development of all ages through play, sporting activities and interaction with others.'*

**Bristol Accord, Dec 2005** <sup>(2)</sup>, described sustainable communities as:

- *'places where people want to live and work, now and in the future'.*
- *meeting 'the diverse needs of existing and future residents',*
- *contributing 'to a high quality of life';*

**Corporate Plan, 2006-2009** <sup>(3)</sup>.

- The achievement of *'Health and Well-being in Bristol'* is also a key aim in the High quality spatial green infrastructural planning and design, including greenspace will be more conducive to positive use within disadvantaged communities, and result in increased health and well-being.

**Bristol's Community Strategy, 2006.** <sup>(4)</sup>

- *'safe city that promotes health, learning and sustainable development - a city where no one is disadvantaged',*

**Bristol Local Plan, Adopted Dec 1997** <sup>(5)</sup>.

- Provides the current planning policy framework for the city area. Whilst its *'main concern is with land use and the physical and natural environment'*, it recognises that *'it is not possible to separate these matters from the social, economic and natural aspects of the area'*. As a result, the plan incorporated five themes that underpin the Plan. One of these, 'Quality of Life' identified an objective *'to recognise and act upon local, national and global environmental issues by adopting and implementing a long term environmental strategy to ensure a cleaner, greener, healthier and safer city both for present and future generations'*.

## 2. Introduction

There is general national recognition that a city will *'appear impoverished and unappealing* <sup>(6)</sup> where *'there is a lack of well-managed and cared-for vibrant, healthy, natural greenspace* <sup>(6)</sup>, which undermines its appearance and discourages *'a positive impression that this is a good place in which to live work and do business* <sup>(6)</sup>.

The landscape infrastructure contribution to Health and Well-being is broad, and is best considered under the headings **Physical Health and Wellbeing, from Increased Fitness, through Exercise and Lifestyle Improvement, Psychological Health and Well-being, and Improved through Healthy Eating.** Particular attention is also given to considering issues that relate strongly to **Children and Young People.** In addition to this, it is important to understand the contribution of green infrastructure to **Optimising Air Quality and Cooling,** as that will contribute directly to improved health and well-being.

## 3. Physical Health and Wellbeing from Increased Fitness through Exercise and Lifestyle Improvement

### **The need for Greenspace for exercise to counter the incidence of obesity and heart disease**

The integration of opportunities for exercise is fundamental and *'when designing an exercise friendly environment, connectivity is king* <sup>(7)</sup>. In this respect, the incorporation of an attractive green infrastructure, including green corridors, greenways and tree lined boulevards, to connect parks and greenspaces and other key public facilities in a safe and attractive way, will

be conducive to its achievement. Dominic Church, Policy Adviser with CABI cautions that 'what happens in really poorly designed housing estates is that people have very indoor lifestyles'<sup>(7)</sup>.

Local green spaces of an adequate size and arrangement will enable access to fitness through exercise, including through informal access to sport. This may simply be somewhere to walk or run, or for children and young people to kick a ball around or play. Not everyone is able to afford a gym membership, or commit to participation in organised sport.

The local availability of greenspace, where people can exercise, is now widely accepted as vital to combating obesity. Alarming, the number of obese adults in England has tripled over the last twenty years and is still rising, and the rate at which the incidence of child obesity is growing, is particularly concerning. As a result, GPs will often prescribe 'a walk in the park' in the interests of getting a patient's weight down and reducing the risk of heart disease, diabetes, etc. Statistics that amplify this reality are given in **Appendix A - Background Statistics**.

Regular participation in sport will also contribute to higher fitness levels, by protecting the cardiovascular system and preventing the onset of other health problems. Formal sport tends to be accessed either through school or by joining a club, but as long as local greenspace provision is of a size and nature to accommodate informal sports participation without conflict with other users, greater spontaneous participation (e.g. football using jerseys on the grass for goal posts) can take place. Outside limited timetabled sport at school, this may continue to be children's best hope for exercise outside school hours, as not all can afford club and gym memberships. Similarly, the availability of hard surfaced public realm may also be beneficial in accommodating informal opportunities for fitness, such as skateboarding.

#### **4. Relationship between the quality of urban green space and physical activity**

Research undertaken by Bristol University between 2005 and 2007, provides evidence that good accessibility to urban greenspace may encourage active travel to work.

##### **Opportunities for trees to counter conditions that contribute to lung disease**

Trees have been shown to remove substantial quantities of particles (PM10s) from the atmosphere, as explained above, and will therefore contribute to reducing the incidence of chronic lung diseases in Bristol, such as asthma and bronchitis.

Where large belts of trees are planted, they tend to be very effective at trapping toxic particles, such as lead, that are known to have a range of health impacts.

The impact of gases, such as carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), and sulphur dioxide (SO<sub>2</sub>), that are firmly linked to both respiratory problems and sensitivity to allergens, will be significantly reduced by the presence of trees through their absorption by their leaves.

#### **5. Psychological Health and Well-being**

In addition to concerns about physical health, people's environment is recognised to be a significant factor in their mental well-being. The economy loses millions of working days each year that are attributed to stress-related conditions, and employers must have a large stake in how this may be addressed.

*Your Parks*, published by the *Urban Parks Forum* asserts 'Greenspace reconnects us to nature, with all of its intrigue and complexity of line, colour, shape, form, texture, movement and smell'<sup>(6)</sup>. This is reinforced by E. O. Wilson, who stresses that 'the human psyche has retained a strong preference towards the natural landscapes of trees, grass and water; it is the view of choice, the vision we still find most appealing'<sup>(8)</sup>.

Greenspace provision will contribute to psychological well-being, through:

- providing adequate 'breathing space' in respect of scale, aspect and accessibility.
- having somewhere to 'escape', relax and release tension.
- giving people an outlook of green vegetation, and access to nature. Significant research bears out how important it is for people to look out onto a soft green environment rather than an unrelieved, built one.

- providing sufficient space where people can socially interact without resulting in tensions with those who live nearby.
- providing public realm space, in a way that enables local participation in its design and long term management.
- relaxation, concentration and counteractive to stress.

Researchers strongly claim the ‘benefits of a better physical environment in *‘improving people’s mental wellbeing (9)’*, D. Halpern recording *‘substantial improvements (10)’* in the mental health of residents once the housing and external environment of a typical new town estate had been upgraded.

## 6. Improved Health through Healthy Eating

The engagement of local people, especially young people, in the act of growing their own food will increase their awareness of the importance of a healthy, balanced diet.

The *Allotments Strategy*, in conjunction with the *Parks and Greenspace Strategy* will continue to provide the framework by which allotments provision will maximise opportunities for people to grow their own food and eat more healthily.

In some cases it may be appropriate to integrate fruit trees and food plants within the context of a public scheme. The design of schools grounds to incorporate such planting, even vegetable plots, will also reinforce current national awareness of the need to raise the standard of children’s diets.

## 7. Health and Wellbeing of Children and Young People

Current levels of child health vary from ward to ward, and are likely to reflect similar variation in conditions conducive to high health and wellbeing across the city. In responding appropriately, future planning must fully exploit opportunities for the physical, emotional and psychological development of children and young people, within the communities in which they live.

### **The need for Parks and Green Spaces, and safe routes to access them, for physical activity to counter the incidence of obesity and heart disease**

Whilst touched on above, the rapid rise in the incidence of childhood obesity is of a sufficiently high concern to explore with greater focus. Again, statistics that highlight why future planning must take this so seriously are given in **Appendix A - Background Statistics**. It is also recognised that obesity can have severe emotional and psychological consequences on young people, ranging from lowered self esteem to clinical depression (11). The epidemic of obesity in children and young people in the UK has been attributed largely to a decline in ‘total energy expenditure (12)’, and linked to increasing sedentary lifestyles.

It is with in context that attractive alternatives are needed to tear children and young people away from computer games and television, and engage them in regular exercise. This must involve the local availability of attractive parks and green spaces that provide opportunities for informal as well as formal sport, and exercise through stimulating forms of play, and equally attractive and safe routes for accessing them by foot or cycle.

### **The contribution of Green Public Realm to Wellbeing**

The *Urban Parks Forum* document *Your Parks* reminds us that ‘in the past, children often played in the relatively traffic free streets of their own neighbourhood, helping to bond the community to the child and the child to the community at an early stage (6)’. At one time, it adds, ‘informal greenspace, increasingly lost to infill development, was more commonly found, and children helped themselves to brown field and derelict land (6)’. Whilst positive planning to avoid the creation, or retention, of ‘space left over after planning’, is supported, this is a timely reminder, that if adequate provision is not already available, locally accessible alternative must be incorporated.

Whilst Homezone principles, may be appropriate to integrate within new development, their retrofit within existing communities can often be significantly compromised, and either way

should be seen, in conjunction with adequate, locally accessible parks and greenspace, and not instead of it.

Whilst some small scale, 'low-key', provision may continue to be associated with housing, its incorporation in a way that is compatible with high density living, whilst meeting current standards has to be critically assessed. Realistically, the expectation remains that most forms of play, ranging from 'natural play' to equipped play areas, and facilities for teenagers, such as 'wheels parks', will be in parks and green spaces.

In integrating adequate provision for children and young people within communities, the four as applied to greenspace will be crucial: availability, amount, arrangement and aspect. Even back in 1989, Cosco and Moore recognised that 'the physical design of the space has a very strong influence on the type and diversity of play and playwork possible in the space (13)', explaining that 'it can "afford" a lot or a little (13)'. Whilst extremely important for play sites to be overlooked, if dwellings are too close, tensions typically arise, especially in communities where children and young people have nowhere else to go.

Provision that satisfies the needs of young people is particularly important in enabling their positive activity in a way that does not result in tension within communities. Shelters and social areas can be incorporated, but their success depends substantially upon having a large enough greenspace, and being able to find a location within it, that is far enough away from houses, whilst not resulting in conflict with other uses, but visible to passing surveillance.

## 8. Optimising Air Quality and Air Cooling

(See also **Topic Paper: Landscape Infrastructure in Balanced & Sustainable Communities: Health & wellbeing**)

PPG 17 acknowledged that green spaces in urban areas, act as 'green lungs' and 'can assist in meeting objectives to improve air quality'. The presence of trees and woodlands in urban areas can make a significant contribution to optimising the quality of the air Bristolians breathe.

Green infrastructure in all its forms, notably as greenspace, trees, and green roofs, will have an important contribution in countering what is termed the Urban Heat Island (UHI) effect, where built-up areas are by their nature significantly warmer than surrounding areas which are not.

Trees directly contribute to cooling the air (14), particularly in summer, through the moisture they emit from their leaves, the shade they cast, and the upward reflection of heat from their foliage.

Where large belts of trees are planted, they tend to be very effective at trapping toxic particles, such as lead, that are known to have a range of health impacts. Tree canopies will also physically filter much by way of airborne pollution, by trapping fine particles (PM10s) on leaf surfaces, and will therefore contribute to reducing the incidence of chronic lung diseases in Bristol, such as asthma and bronchitis.

The cooling and shading effect of urban trees also help reduce the rate at which ozone (O<sub>3</sub>) is produced; ozone is a smog-forming gas that can, if concentrations are high enough, result in symptoms ranging from stinging eyes, nose and throat, to irritation of the lungs, coughing and chest pains (15) (16).

## 9. Health and Wellbeing and the Economy

The economic element of health and wellbeing considerations are explored under separate in associated **Topic Paper: Landscape Infrastructure in Balanced & Sustainable Communities: Health and Wellbeing** under *Economy - Reducing Costs arising from Poor Health*.

## 10. Healthy Movement

The **Joint Physical Activity Strategy for Bristol** includes objectives:

- To support environmental improvements for walking and cycling, and public transport,

through the **Joint Local Transport Plan (JLTP)** and planning processes.

- To encourage, under Living Streets, walkable and walked neighbourhoods, to make our built environment and neighbourhoods liveable spaces.
- To develop the capacity for people to take part in active travel through training/ information provision and involvement in events.

Research undertaken by *Bristol University* between 2005 and 2007, indicates that good access to urban greenspace increases the probability that people will walk or cycle to work. The study asserts that future urban design should 'consider how urban green space can be linked to travel routes to and from key, frequent destinations such as workplaces, shops and amenities'.

## 11. Conclusions

- Communities with a high quality landscape infrastructure will provide an optimum setting for achievement of health and wellbeing.
- An attractive green setting for housing, and the proximity of a good quality park or greenspace, will contribute strongly to the psychological wellbeing of residents.
- The local availability of parks and greenspaces, and green corridors, will enable greater fitness through exercise among the local population, notably children and young people.
- A Community with a high quality green infrastructure will be well provided to reduce the incidence of poor health and morbidity.
- School grounds that are attractive through being substantially soft and green, and high in vegetation content that is either native, or otherwise attractive to wildlife, will be more beneficial to children's and young people's physical, emotional and psychological development.

## 12. Background Statistics

Item	Ref
<b>Physical Fitness and Health and Lifestyle Improvement</b>	
<b>- Obesity</b>	
• The number of obese adults in England has <u>tripled</u> over the last twenty years and is still rising.	17
• Obesity results in 30,000 deaths in England, a year.	17
• Obesity will, in 10-15 years overtake smoking as Britain's biggest killer, if current trends persist.	9 18
• 62% of men are either overweight or obese.	17
• 53% of women are either overweight or obese.	17
• 17% of men suffer from clinical obesity.	17
• 20% of women suffer from clinical obesity.	17
• 20% of 4-year olds are overweight.	9
• The number of obese 6-year olds has doubled in the last ten years.	17
• 8.5% of 6-year olds are obese	9
• The number of obese 15-year olds has more than trebled.	17
• 15% of 15-year olds are obese	9
• Obesity, which 'results in 30,000 deaths a year in the last ten years.	17
• 40% of the UK population could be obese within a generation	19

## 13. Evidential Statistics

Item	Ref
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<b>Air Quality and Cooling</b>	
• A tree's ability to offset carbon emissions is determined by size, canopy spread, health and age, but large trees can help lower carbon emissions in the atmosphere by 2-3%.	20
• An 80ft beech tree has been shown to remove daily carbon dioxide equivalent to that produced by two family dwellings.	20
• Trees can generate 10-50% savings in cooling expenses, and 4-22% savings in heating costs, where they are effectively planted in relation to buildings.	20
• Trees have been shown to remove 10.8 tonnes of PM10s on an average summer's day. ( <i>Chicago, US</i> ).	21 22
• Woodland can reduce the concentrations of SO2 and NO2 in the air by 4-5%. ( <i>Research on Greenwood Community Forest, Nottingham</i> )	23, 21

<b>Health Economy</b>	
• If 1 in 100 people took exercise it would result in savings to the NHS in Scotland of £85M.	9 24
• In reducing the incidence of obesity, the presence of greenspace, has been calculated to save the NHS at least £0.5 billion p.a., and the wider economy a further £2 billion, arising from lower productivity and lost output.	17

<b>Flood Control</b>	
• Run-off rates for surfaces with trees and grass estimated to be 10-20% compared with 60-70% for hard landscaped urban areas.	25

<b>Physical Health and Wellbeing from Increased Fitness through Exercise and Lifestyle Improvement</b>	
<b>- Fitness and Health</b>	
• A brisk walk in a local park can reduce the risk of heart attacks by 50%.	9 18 26
• A brisk walk in a local park can reduce the risk of strokes by 50%.	18
• A brisk walk in a local park can reduce the risk of diabetes by 50%.	9 18 27
• A brisk walk in a local park can reduce the risk of a fracture of the femur by 30% (63) or 40% (18 and 90).	18
• A brisk walk in a local park can reduce the risk of colon cancer by 30%.	9 18 28
• A brisk walk in a local park can reduce the risk of breast cancer by 30%.	18
• A brisk walk in a local park can reduce the risk of Alzheimer's by 25%.	18
• Increasing the distance walked by a group of sixty 61-80 year olds from 1 to 2 miles/day, resulted in one less death p.a.	9 24
<b>- Sports participation</b>	
• 7% of Urban Park Users in England go there for sporting activities.	9 29
<b>- Healthier Environment</b>	
• It has been estimated that woodland can reduce concentrations of Sulphur dioxide (SO2) and nitrogen dioxide (NO2) in the air by 4-5%.	23
•	
<b>Psychological Health and Wellbeing</b>	
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<b>Children and Young People</b>	
• 85% of parents of children with Attention Deficit Disorder (ADD) stated that their children's behaviour improved after green space activities (such as fishing and football)	9 30

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## Organisations

- Mind [www.mind.org.uk](http://www.mind.org.uk)
- National Institute for Health and Clinical Excellence

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